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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHEN, CHONGSHAN

ART UNIT	PAPER NUMBER
2162	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/782,586

Applicant(s)

ARONOFF ET AL.

Examiner

Chongshan Chen

Art Unit

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is responsive to Amendment filed on 28 February 2005. Claims 1-19 and 21-34 are pending in this Office Action.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 17-19 and 21-33 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

MPEP 2106 IV. B.2. (b)

A claim that requires one or more acts to be performed defines a process. However, not all processes are statutory under 35 U.S.C. 101. Schrader, 22 F.3d at 296, 30 USPQ2d at 1460. To be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan, or (B) be limited to a practical application within the technological arts.

Claims 17-19 and 21-33, in view of the above cited MPEP section, are not statutory because they merely recite a number of computing steps without producing any tangible result and/or being limited to a practical application within the technological arts. The use of a computer has not been indicated. The examiner suggests changing the preamble to “A computer-implemented method” and incorporating hardware such as memory into the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-19 and 21-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoh et al. ("Satoh", 5,640,561) in view of Pagano et al. ("Pagano", MS Exchange, 1996).

As per claim 1, Satoh teaches a device for performing replication between a source system and a target system, the device comprising:

a source system having data files, and log files storing transactions corresponding to changes made to the data files (Satoh, Fig. 1, col. 3, lines 20-29);

a recovered target system wherein the recovered target system comprises a rolled back copy of the data files in the source system and wherein the rolled back copy of the data files comprises data that is associated with at least one replication transaction stored in the log files (Satoh, Fig. 1 & 3, col. 3, lines 20-50); and

a replication system performing replication of at least portions of the data files of the source system to the recovered target system by reading the log files and posting the changes from the log files to the recovered target system, the replication system (Satoh, Fig. 3, col. 3, lines 20-50) comprising:

transaction-level poster queues, each poster queue storing statements corresponding to a particular replication transaction from the source system (Satoh, Fig. 3, col. 3, lines 20-50).

Art Unit: 2162

Satoh does not explicitly disclose a reconcile process which purges replication transactions from the poster queues when the replication transactions have already been applied to the recovered target system; and wherein the replication system performs the replication transactions by rolling forward at least some of the information rolled back during the recovery of the recovered target system such that the purged replication transactions in the poster queues are not applied while rolling forward such that the source database remains available during recovery of the recovered target database. Pagano teaches purging replication transactions from the poster queues when the replication transactions have already been applied to the recovered target system; and wherein the replication system performs the replication transactions by rolling forward at least some of the information rolled back during the recovery of the recovered target system such that the purged replication transactions in the poster queues are not applied while rolling forward such that the source database remains available during recovery of the recovered target database (Pagano, page 3, page 8-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Satoh by purging stale replication transactions and making the source database available during the recovery as disclosed by Pagano (Pagano, page 3, page 8-11). The motivation being to save data storage by removed the stale replication transactions and make the database available 24 x 7 for continuous service.

Claim 2 is rejected on grounds corresponding to the reasons given above for claim 1.

As per claim 3, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach the information comprises transactions (Satoh, col. 3, lines 20-29).

As per claim 4, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach the at least one poster process reads a completion indicator from the poster queues, wherein the completion indicator corresponds to one or more finalized changes made to the source system (Pagano, pages 7-8, checkpoint).

As per claim 5, Satoh and Pagano teach all the claimed subject matters as discussed in claim 4, and further teach the completion indicator corresponds to a COMMIT statement (Pagano, pages 7-8).

As per claim 6, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach the reconcile process employs placement indicators to determine which information stored in the poster queues is stale (Pagano, pages 7-8).

As per claim 7, Satoh and Pagano teach all the claimed subject matters as discussed in claim 6, and further teach one of the placement indicators corresponds to a recovery marker placed by the target system, wherein the recovery marker identifies how much of the information the target system already applied during recovery thereof (Pagano, pages 7-8).

As per claim 8, Satoh and Pagano teach all the claimed subject matters as discussed in claim 6, and further teach one of the placement indicators corresponds to a particular portion of the information (Pagano, pages 7-8).

As per claim 9, Satoh and Pagano teach all the claimed subject matters as discussed in claim 6, and further teach each placement indicator comprises a sequence number identifying a log file where a particular portion of the information originated (Pagano, page 7).

As per claim 10, Satoh and Pagano teach all the claimed subject matters as discussed in claim 6, and further teach each placement indicator comprises a displacement number identifying

Art Unit: 2162

the displacement within a log file where a particular portion of the information originated (Pagano, pages 7-8).

As per claim 11, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach a reader process which reads the information from the source system (Satoh, Fig. 3, col. 3, lines 20-50).

As per claim 12, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach a reader queue which stores information read from the source system (Satoh, Fig. 3, col. 3, lines 20-50).

As per claim 13, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach the replication includes mirroring at least portions of the source system on at least one target system (Satoh, Fig. 3, col. 3, lines 20-50).

As per claim 14, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach the replication includes load balancing function based on one of software and hardware configurations of the source and target systems (Satoh, col. 3, lines 20-67).

As per claim 15, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach the replication provides broadcast functions (Satoh, col. 4, lines 65-67).

As per claim 16, Satoh and Pagano teach all the claimed subject matters as discussed in claim 2, and further teach the replication provides consolidation functions (Satoh, col. 10, lines 18-23).

Art Unit: 2162

As per claim 17, Satoh teaches a method of recovering or instantiating a target database during replication from a source database to the target database, the method comprising:

creating a target database that has a copy of data from a source database (Satoh, Fig. 1, element 13, col. 3, lines 20-67);

logging replication transactions in a replication system wherein the replication transactions are associated with changes made to the source database (Satoh, Fig. 3, col. 4, lines 46-67);

applying the replication transactions to the target database to maintain in the target database a copy of the source database (Satoh, Fig. 1, 3 & 4, col. 5, lines 20-38);

identifying an unsynchronizing event associated with the target database (Satoh, col. 3, lines 20-67);

recovering the target database by rolling back information previously applied to the target database such that the recovered target database contains a copy of at least some of the changes represented by the replication transactions contained in the replication system (Satoh, col. 3, lines 20-67).

Satoh does not explicitly disclose reconciling the recovered target database with the replication transaction contained in the replication system, thereby purging stale replication transactions from the replication system; and restarting replication by rolling forward at least some of the information rolled back during the recovery of the target database that the purged stale replication transactions are not applied during replication and wherein the source database remains available during recovering, reconciling and restarting. Pagano teaches reconciling the recovered target database with the replication transaction contained in the replication system,

Art Unit: 2162

thereby purging stale replication transactions from the replication system; and restarting replication by rolling forward at least some of the information rolled back during the recovery of the target database that the purged stale replication transactions are not applied during replication and wherein the source database remains available during recovering, reconciling and restarting (Pagano, page 3, page 8-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Satoh by purging stale replication transactions and making the source database available during the recovery as disclosed by Pagano (Pagano, page 3, page 8-11). The motivation being to save data storage by removed the stale replication transactions and make the database available 24 x 7 for continuous service.

As per claim 18, Satoh and Pagano teach all the claimed subject matters as discussed in claim 17, and further teach restarting replication (Satoh, col. 3, lines 20-67).

As per claim 19, Satoh and Pagano teach all the claimed subject matters as discussed in claim 18, and further teach the restarting of the replication includes restarting at least one poster process (Satoh, Fig. 2, col. 3, lines 20-67).

As per claim 21, Satoh and Pagano teach all the claimed subject matters as discussed in claim 17, and further teach the creation of the copy includes employing a hot backup mode of a database management system of the source database (Satoh, col. 3, lines 20-67).

As per claim 22, Satoh and Pagano teach all the claimed subject matters as discussed in claim 17, and further teach the recovery of the copy includes employing a database management system associated with the copy (Satoh, col. 3, lines 20-67).

Art Unit: 2162

As per claim 23, Satoh and Pagano teach all the claimed subject matters as discussed in claim 17, and further teach the recovery of the copy includes placing a recovery marker in the recovered copy, thereby identifying a recovery position therein (Pagano, pages 7-8, checkpoint).

As per claim 24, Satoh and Pagano teach all the claimed subject matters as discussed in claim 23, and further teach the placement of the recovery marker occurs substantially near the end of recovering the copy (Pagano, pages 7-8).

As per claim 25, Satoh and Pagano teach all the claimed subject matters as discussed in claim 23, and further teach the reconciling finds the recovery marker and the stale transactions of the information correspond to those transactions that were completed on the source system before the placement of the recovery marker (Pagano, pages 7 –11).

Claims 26-34 are rejected on grounds corresponding to the reasons given above for claims 1-19 and 21-25.

Response to Arguments

6. Applicant's arguments filed on 28 February 2005 have been fully considered but they are not persuasive.

7. As per applicant's arguments regarding the references do not teach purging the stale information associated with the replication of a source database before being applied to a recovered target database have been considered but are not persuasive. Pagano teaches log files older than the checkpoint at the start of the backup operation are purged (Pagano, page 8). The checkpoint indicates which transactions have been applied to the target system. Therefore, the arguments are not persuasive.

Art Unit: 2162

8. As per applicant's arguments regarding the references do not teach the source database remains available during recovery and reconciliation of the target database have been considered but are not persuasive. The system of Pagano is designed such that it does not need to taken off-line to perform backup. The system remain in service during backup (Pagano, page 3).

Therefore, the arguments are not persuasive.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chongshan Chen whose telephone number is (571) 272-4031.


The examiner can normally be reached on Monday - Friday (8:00 am - 4:30 pm).

Art Unit: 2162

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chongshan Chen
June 23, 2005



JEAN M. CORRIELUS
PRIMARY EXAMINER